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CONSEQUENCES OF THE COMMERCIALISATION OF PLASMA AND BLOOD IN CHINA

KONSEKWENCJE KOMERCJALIZACJI OSOCZA I KRWI W CHINACH

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STRESZCZENIE

Zakażenia HIV w następstwie przetaczania krwi i produktów krwiopochodnych zdarzyły się w wielu krajach rozwiniętych w początkach epidemii HIV/AIDS. W Chinach wprowadzenie gospodarki rynkowej i komercjalizacji krwi i produktów krwiopochodnych po 1989 roku doprowadziło do rozprzestrzenienia się zakażenia HIV wśród biednych mieszkańców wsi. Przedstawiono historię zakażeń HIV wskazującą, że krew i produkty krwiopochodne nie mogą być traktowane jak towary przynoszące dochód.

Słowa kluczowe: *HIV, płatni dawcy krwi, Chiny*

ABSTRACT

HIV infection as a consequence of blood transfusions and blood by-products has occurred in many developed countries from the outset of the HIV/AIDS epidemic. In China the introduction of the market economy and commercialisation of blood and blood products after 1989 has led to the spread of HIV infection among poor peasants living in the Chinese interior. In this review a history of HIV infections was presented showing that blood and blood products cannot be treated as commercial goods.

Key words: *HIV, commercial blood donors, China*

INTRODUCTION

Over the last few years many articles describing HIV infection among groups of Chinese patients referred to as former blood donors have appeared in renowned medical publications, constituting the author's opinion of these 'exceptional cohort' articles on a complex world scale of people infected by selling them blood and/or plasma. They haven't usually resembled how the rising of these 'exceptional cohorts' came about, made up of village inhabitants, and whose size is never estimated. The term 'former blood donors' can arouse anxiety, that voluntary blood donation also in developed countries may create the risk of HIV infection. However, 'former blood donors', defined earlier as 'former commercial blood donors' constitute exclusively a problem of China.

THE ORIGINS OF HIV INFECTION TRANSMITTED VIA BLOOD

The history of HIV infection among Chinese village inhabitants started after 1989, together with the introduction of the market economy. The privatisation of all areas of the economy which could have brought profit was encouraged at that time, politicians recognised, that not everyone and everywhere had to get rich

equally quickly. Cities above all developed the fastest, particularly on the eastern coast, in order to improve the infrastructure of these regions so that it could encourage foreign investors. Country areas deep inside of country became impoverished. Village inhabitants had difficulties remaining in agriculture, possessing a small plot of land – often in the region of 0.05 hectares per person (1), and in the period of economic transformation the average monthly income from agriculture amounted to 8-12 US dollars. There have usually been no alternative options of earning money.

The liberalization of the economy led to dramatic changes in the funding of health and the social services in China. Provincial and local health bureaus, and other public institutions previously funded by the state, struggled to find new sources of income. Beginning in the early 1990s, and accompanying the acceleration of capitalist-oriented economic reforms that followed the 1989 Tian'anmen massacre, cash-strapped provincial health bureaus, military units, and other entities created business ventures to procure and resell blood and blood-products for both urban and international markets (2). From the late 1980s until the early 1990s, thousands of commercial blood collection stations were established around the country, mostly in rural areas, conducted through companies producing blood-related products. In China it was quickly realised that blood is

a commodity, which leads itself to many possibilities of making a profit. It was also known that the safest would be purchasing of full blood or its plasma from peasants living in the interior of the country, where drugs were not injected, there were no sexual services, and therefore from healthy people.

For years at numerous commercial collection centers, the blood from multiple ABO-matched donors was combined for more efficient, large volume plasma separation. The pooled cell fraction was then returned to the donors, along with the infectious agents that had been present in the blood of the other donors at a given session. The same needles and inadequately sterile equipment were repeatedly used for the collection of blood (3).

First information about infection with the HIV amongst country dwellers turned up at 1985, in the *Lancet*. A mother and her two daughters tested HIV antibody positive in rural village of Fuyang District, Anhui Province, China, between February and March, 1995 (4). The mother was 41 and the daughters were 16 and 19 years old. The other family members, the father and a son, 49 and 21 years old, respectively, were both HIV antibody negative. The mother denied any extramarital sexual activities. Both daughters denied any sexual intercourse. All of them denied use of any drugs. They all denied having had any medical, surgical, or dental care, or injections in recent years. However, all three were commercial plasma donors. Neither these infected women nor their family members were informed of the infection because it was feared that they would commit suicide if they discovered they were infected with HIV. A year later, information was also disclosed of the detection of HIV antibodies at a blood donor being in the asymptomatic stage of HIV infection (5). However only articles by Elisabeth Rosenthal of the *New York Times* in 2000 kept an eye on the being of the problem in Chinese villages (6). Only then information about applied practice in commercial collection centers was leaked to a public opinion.

The seroprevalence of HIV was closely related to the frequency of plasma donations. While HIV seroprevalence was 8.3% among persons who on average made less than five donation per month, it was 16.1% among those having made more than five but less than 15 donations per month, and 41.7% among those having made more than 15 donations per month (7). Sold blood was often not tested regarding any diseases transmitted by blood or only antibodies against the hepatitis type B virus were searched for (2). Confirmation of the presence of these antibodies thus disqualified donors. Up to 1995 tests regarding the presence of anti-HIV antibodies were not required (8).

In accordance with obligatory regulations the shortest permissible interval between the sale of consecutive portions of plasma should have amounted to 15 days,

and full blood - 3 months. However, this was not complied with everywhere. By turns, country inhabitants, in order to earn more, went around various centres, at times giving false personal data to avoid these pauses in the sale of blood. Reinfusing blood cell reduces the risk of anaemia occurring, which ultimately allows donors to continue feeling well after making a donation and, thus, to sell plasma or blood much more frequently. Most of these blood donations were accomplished twice a month, some twice a week, though there were also those who sold their plasma every second day and even a few times daily (9).

The sale of plasma by poor people living in hard to reach regions of rural China, in particular from the provinces of Henan, Hebei, Hubei, Anhui, Shanxi and Jilin, became a popular way of earning a living. In Henan province alone, the population was 80 million people, 80% of them were poor peasants (8). Most of the donors were between 20 and 50 years of age, and most of them were women. In campaigns conducted in villages and schools peasants were encouraged to sell their blood and/or plasma. The suspicion appeared that some state officials from the province management were making profits from this procedure. Questions concerning these issues, put to the Henan province authorities in 2004 in the editorial of *Science* magazine were left to the central authorities, but they did not share their answers (9).

ESTIMATED CONCERNING THE NUMBER OF INFECTED WITH HIV AMONG THOSE SELLING BLOOD AND/OR BLOOD PRODUCTS

According to Ho the epidemiology of HIV and AIDS in China remains something of a mystery (8). For years most reported cases in China have involved people who were hospitalized or incarcerated, and thereby tested within these institutions. The Chinese Ministry of Health national HIV/AIDS sentinel surveillance system has been in operation since 1995 and remain the principal source of information concerning HIV prevalence over time, in population groups of specific interest. The collection of data were done twice a year on five population groups: patients with sexually transmitted diseases, women selling sex, drug users, truck drivers, and pregnant women.

Doctors working in hospitals in Henan province in 2001 estimated that tens of thousands of people succumbed to the infection as a consequence of selling plasma (10). In 2002 Ho claimed, that there might have been be one to three million infection within this region, which would lead to significantly higher estimates put forth by the Chinese authorities (8).

In 2002 Chinese experts admitted that most individuals infected with HIV in this country were from rural areas (81% are between the ages of 20 and 39 years), infection of donors during the plasma or blood collection process contribute to 9.7% of all reported infections, but number of people who have contracted HIV by receiving blood or blood product has not been officially estimated (11).

In China, the provinces the most touched by HIV/AIDS as a result of blood sales became known as “AIDS villages”, isolated from the rest of the country. The journalists visits were prohibited, as well as the emergency service workers and the health service, sometimes also the people attempting to arrive with some form of help were arrested. In some villages the frequency of HIV infection reached even 80% (12). In one of these, Wenlou, in the city hospital only two doctors were available for over 1000 HIV infected patients (12). In others of over 600 inhabitants selling blood 231 became infected with HIV, and by 2004 25% of them had died of AIDS (14). In one of the provinces villages it was shown that from 208 women selling their blood in the years 1992-1996 up to 106 (50.9%) became infected with HIV, 67 of them gave birth to 86 children, from which 33 were infected from the mother (38.4%). HIV infection was shown even in 4 children, from which 3 succumbed to the infection as a result of the transmission of infected blood, and one via an unsterile injection syringe given in a local hospital. Neither these children, nor their mothers, had access to antiretroviral drugs. The frequency of HIV infection among men selling their blood in these villages is equally large. In research conducted in 40 villages in Anhui province in the years 2003-2004 it was discovered that among people aged between 25 and 55 selling plasma in the 1990s the frequency of HIV infection amounted to 15.1%, and among those who were not earning in this way – 4.8% (13). Only in Henan province around 200,000 became orphans due to family AIDS deaths.

In 2006 it was shown that living in the same place in which there was a blood and/or plasma purchase institution was a factor in the risk of HIV (14). It was also found that the risk of HIV infection and/or HCV was 22.5 times greater for people selling plasma and over 3 times greater for selling full blood in comparison with people who had not earned in this way (14).

In 2010 a report by Li et al. admitted that in Henan province former blood donors constituted one of the the largest group of people living with HIV, but as these people were infected in the 1990s, many of them were already either at the AIDS stage or deceased. For over 10 years of HIV in this province the spread has been by sexual contact, and also transmitted from mother to children (15). In 2004 85.6% (17,441) cases of HIV/AIDS constituted people selling blood in this province

and in 2006 this percentage fell to 38.4% (1,512). In information about the mortality rate caused by HIV/AIDS in Henan province it is noted that among people between the ages of 20 and 49 it increased < 20% in the years 1995-1997, to 27.5% in 1998 and to 49.2% in 2001 (from 7 deaths per 1,000 people in the years 1995-1999 to 14.9 deaths per 1,000 in 2002), (16). As the authors point out, data concerning the length of survival from HIV may be inaccurate in databases, since they seemed to be collected in a general epidemiological supervised system and it was not information concerning inhabitants of this region for the years 1995-2003.

Dou et al. admit that their analysis of life expectancy is connected with ‘former plasma donors’, whose constant life from the time of mass screening in 2004 and people were not counted who did not survive (17). The authors underlined that the infected group was the biggest infected group in the world associated with the ‘plasma donation’ business. They also admitted that the size of the HIV epidemic among ‘former blood/plasma donors’ was not foreseen, not before they started to fall with AIDS and die in large numbers at the beginning of the 2000s. As the authors point out, ‘former blood/plasma donors’ were above all poor farmers, they did not take injection drugs, they didn’t engage in any ‘risky’ behaviour, and ‘after the spouse being informed of infection and newly-born children the appearance of new infections practically stopped’. They also confirmed that infection practices of HIV and HCV through people selling plasma ceased after the issuing of government orders in 1996.

The *Henan Provincial Center for Disease Control and Prevention* data says that 6,990 cases of HIV/AIDS were identified in this province from 2008 to 2009 (HIV identified in 83 people, AIDS in 1,131 – 93.2%). It was underlined that in 99% of cases concerned people of Han nationality (in China it’s been long considered that HIV/AIDS is a foreigner and ethnic minority disease). Over 65% of infected people were in the past commercial plasma and/or blood donors. Within this time 1,214 people died. The average survival time from the confirmation of HIV infection amounted 62 days, 436 people (35.9%) died in the period of 1 month and 959 people (79.0%) in a period of 6 months from the confirmation of infection (18).

LEGAL CHANGES AND CURRENT CHALLENGES TO CONTROL THE SPREAD OF HIV AMONG THE COMMERCIAL BLOOD DONORS

Routine testing of donors for HIV has been required by Chinese Ministry of Health since 1993. In 1995 the government in Beijing took steps with the aim of preventing the furthering of the spread of HIV along these

lines, imposing the closure of all commercial centres for the purchase of blood and plasma not having a state licence (3). Established regulations outlawed all unlicensed blood collection, and about the same time started to enforce nationwide HIV testing for all blood donors, including those donating plasma. In 1998 it brought in a succession of legal regulations concerning the giving of blood, introducing the necessity for controlling the transmission of infections via blood and de-legalising commercial centres for the purchase of plasma (2). It intensively popularised the voluntary donation of blood.

Legal regulations did not mean the total liquidation of this business. Blood-collecting companies have mostly operated illegally and collected profits by selling blood products domestically and internationally. With the padlocking of official Government blood-collection centers in 1995 to 1996 blood-collection companies turned their attention to clandestine blood-collection centers that sprouted up in remote, impoverished areas in order to circumvent interference from government authorities (3). Even in March 2005 the Chinese Ministry of Health revealed the closure of 147 illegal plasma purchase institutions over the last 12 months and the subsequent punishment of 86 for the non-compliance of safety regulations. These practices may be continuing, whereas normally the lack of blood is indispensable for surgical procedures and for the pharmaceutical industry, and poor villagers in far away parts of the country usually do not have sufficient information and insist on the right to sell blood (2).

In 2003 the central authorities introduced the CARES programme (*Comprehensive AIDS REsponse*), which offered those infected as a consequence of selling their blood, free antiretroviral drugs (3). However the rapidly introduced act did not give time for preparation of therapy neither for patients nor their doctors, which meant that patients often did not comply with recommendations connected with the taking of medications, some in general stopped taking them. Therefore programmes started to be introduced for the supervision of taking medicines, and in one of these villages, thanks to the help of a Hong Kong foundation applied a special bonus – a patient taking the proper medication received fresh eggs every 2 weeks.

In May 2004 the government financed a large, nationwide campaign against unsafe practices connected with the sale of blood, beginning testing of people selling blood (2). From June to August of this year in Henan province 280,307 people were identified as selling their blood, with over 90% of them undergoing testing. HIV infection was identified at 23,157 people (9.9%), which was a number 6 times greater than the number of infection identified in previous 10 years (19).

In China the demand for blood almost always exceeds supply. Cultural considerations mean that Chinese

– especially men – unwillingly give blood, considered in traditional Chinese medicine as indispensable for a strong life. Blood loss has the effect of weakening and being damaging to health. Blood donation (and loss) are the domains of women, whilst donating by men is known as very damaging (2). In 1985 import of blood and blood products were forbidden which additionally increased the instances of shortages.

After 1998 the number of donors not receiving income from giving blood started to grow. It did not cover however the increasing needs. In Beijing for example the number of donors reduced in summer and in winter, when students – making up most of the donors – return home. Moreover some blood groups rarely appear in China. Rhesus negative blood makes up only 15% of Chinese and only 0.3% Han Chinese. However Beijing, the international metropolis, has at its disposal certain amounts of rare blood groups (20).

With the shortages in volunteer donors, who do not receive money for donating blood or plasma, the Chinese authorities are seeking ways of motivating people for the blood donation. The responsibility for the recruitment of voluntary donors lies with local authorities. The authorities in turn agree on the number of donors, who have to come from state enterprises or universities. The non-delivery of the target figure of blood donors is resulting in financial penalties for employers. Therefore volunteer blood donors get from employers monetary rewards. Some villagers, for the sale of blood, received only 20 yuans (equivalent to 2.4 US dollars) for giving a portion of plasma, but this amounted, for many, to full month's income. In order to stop the sale of blood by peasants healthy workers in cities can receive from 50 to 2,000 of yuans (equivalent to 6 – 240 US dollars) for the “voluntary” blood donation. Employers pay this in order to suffice the required number of blood donors and therefore avoid paying much higher penalties (2).

The official data says that the number of voluntary blood donors has systematically grown. However in 2010 data says that the safety of blood in village areas of China is decidedly insufficient, since many blood portions marked as safe turned out to contain HBsAg, anti-HCV antibodies and antibodies against *Treponema pallidum* after being repeatedly examined – information not given concerning the risk of transmission of HIV (21).

Actions are also taken with the aim of improving the quality of life of people living with AIDS in the provinces, where infection is spread via the sale of blood and/or plasma. In January 2010 it turned out that a pilot programme entitled ‘planting and eating soybeans’ was effective and sustainable for people living with HIV/AIDS in poor rural areas, where the average household income amounted to the equivalent of 760 US dollars annually, and consumption grown within the framework

of the soya project meant that 94% of those surveyed felt better, 86% reported less sickness, 61.3% had higher total blood protein, 58.1% had higher blood haemoglobin, and 54.9% had a higher CD4 cell count (22).

CONCLUSION

The neoliberal economic regulations implemented in China aiming at privatisation and profits deriving from everything that can be taken, and also financial stratification between cities and villages resulted in poor peasants starting to earn in the only way possible for them, which was selling their own blood and/or plasma, for which they received money allowing them to survive. It shows that not everything can be treated as goods bringing in a profit, particularly blood and blood products.

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